6612-18

Serial No.: 10/669,436 Filed: September 25, 2003

LISTING OF THE CLAIMS

The present listing of the claims supersedes any previous listing of the claims.

| 1. | (Cancel) |
|----------------|--|
| 2-4. | (Previously Canceled) |
| 5-6. | (Cancel) |
| 7. | (Currently amended) A stress sensor comprising: |
| | a first electrode; |
| | at least one other electrode; and |
| | a dielectric layer disposed in relation to the first and the at least one other electrode |
| for the | e electrodes to supply an electric field (E) to the dielectric layer, wherein the dielectric |
| layer o | comprises a diamond-like carbon film that exhibits a change in conductivity when |
| expos | ed to an electric field (E) at a level above a critical electric field (E*), wherein the |
| <u>critica</u> | l electric field (E*) of the diamond-like film shifts under an applied stress, and [The |
| stress | sensor of claim 5,] wherein the critical electric field (E*) comprises about $2x10^5$ V/cm. |
| | |
| 8-10 (| Cancel) |
| 11. | (Currently Amended) A stress sensor comprising: |
| | a first electrode: |
| | at least one other electrode; and |
| | a dielectric layer disposed in relation to the first and the at least one other electrode |
| for the | electrodes to supply an electric field (E) to the dielectric layer, wherein the dielectric |
| layer o | comprises a diamond-like carbon film that exhibits a change in conductivity when |
| expose | ed to an electric field (E) at a level above a critical electric field (E*), wherein the |
| <u>critica</u> | l electric field (E*) of the diamond-like film shifts under an applied stress, and [The |
| stress | sensor of claim 5,] wherein compressive forces on the diamond-like carbon film lowers |
| the val | lue of the critical electric field (E*) and wherein tensile forces on the diamond-like |
| carbor | film increases the value of the critical electric field (E*). |

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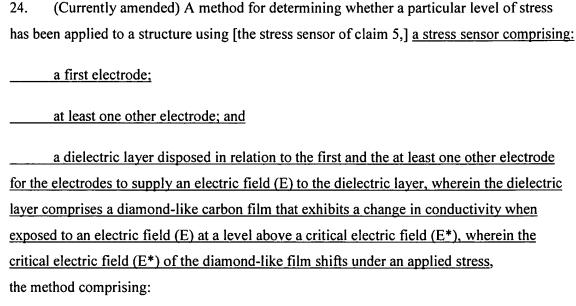
22-23 (Cancel)

| 18. (Currently amended) A stress sensor comprising: |
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| a first electrode; |
| at least one other electrode; and |
| a dielectric layer disposed in relation to the first and the at least one other electrode |
| for the electrodes to supply an electric field (E) to the dielectric layer, wherein the dielectric |
| layer comprises a diamond-like carbon film that exhibits a change in conductivity when |
| exposed to an electric field (E) at a level above a critical electric field (E*), wherein the |
| critical electric field (E*) of the diamond-like film shifts under an applied stress, and [The |
| stress sensor of claim 17,] wherein the diamond-like carbon film has a thickness and the |
| electrodes are disposed laterally with respect to each other a distance no greater than the |
| thickness of the diamond-like carbon film. |
| 19-20 (Cancel) 21. (Currently amended) A stress sensor comprising: |
| a first electrode; |
| a plurality of other electrodes; and |
| a dielectric layer disposed in relation to the first and the at least one other electrode |
| for the electrodes to supply an electric field (E) to the dielectric layer, wherein the dielectric |
| layer comprises a diamond-like carbon film that exhibits a change in conductivity when |
| exposed to an electric field (E) at a level above a critical electric field (E*), wherein the |
| critical electric field (E*) of the diamond-like film shifts under an applied stress, and [The |
| stress sensor of claim 5, comprising a plurality of the other electrodes,] wherein the diamond |
| like carbon film is deposited onto a surface of a structure being measured for stress as a |
| continuous layer to serve as a sensing layer for the plurality of the other electrodes. |
| |

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applying an electric field (E) with the first electrode and the at least one other electrode to the dielectric layer;

monitoring the conductivity of the dielectric layer; and determining whether the particular level of stress has been applied to the structure

based on a change in the conductivity of the dielectric layer.

- 25. (Previously Presented) The method of claim 24, comprising determining whether the particular level of stress has been applied based on a shift in the critical electric field (E*) of the dielectric layer resulting from the applied stress.
- 26. (Previously Presented) The method of claim 25, comprising applying an electric field (E) at a level less than the critical electric field (E*) and determining whether a particular compressive stress has been applied to the structure based on a change in the conductivity of the dielectric layer which results from a shift in the critical electric field (E*) of the dielectric layer as a result of the compressive stress.
- 27. (Previously Presented) The method of claim 26, comprising determining whether a particular compressive stress has been applied to the structure based on a change in conductivity of the dielectric layer which results from a shift in the critical electric field (E*) of the dielectric layer to that less than the electric field (E) applied.

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28. (Previously Presented) The method of claim 25, comprising applying an electric field (E) at a level greater than the critical electric field (E*) and determining whether a particular tensile stress has been applied to the structure based on a change in the conductivity of the dielectric layer which results from a shift in the critical electric field (E*) of the dielectric layer as a result of the tensile stress.

29. (Previously Presented) The method of claim 28, comprising determining whether a particular tensile stress has been applied to the structure based on a change in conductivity of the dielectric layer which results from a shift in the critical electric field (E*) of the dielectric layer to that greater than the electric field (E) applied.